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PHYSICAL CONSTITUENTS OF QUALIA*

ABSTRACT. In this paper I propose a defense of a posteriori materialism. Problems with a posteriori identity materialism are identified, and a materialism based on composition, not identity, is proposed. The main task for such a proposal is to account for the relation between physical and phenomenal properties. Composition does not seem to be fit as a relation between properties, but I offer a peculiar way to understand property-composition, based on some recent ideas in the literature on ontology. Finally, I propose a materialist model for the mind-body relation that is able to resist the attack from conceivability arguments.

INTRODUCTION

It is pretty clear what a good materialist theory of the mind should minimally satisfy as constraints: to be materialistic, to be a theory, and to be about the mind. The dominant materialist view of the last few decades – functionalism in its various cloaks- can be said to have interpreted the aforementioned constraints the following way. To be *materialistic* was for the theory to offer the mind a place wholly within the facts dealt with by the fundamental science of the material world, that is, by physics. To be a *theory* of the mind meant to offer an *analysis* of the mental in non-mental terms. Finally, to be about the mind meant to conform to how we most naturally think of our own mental life and also to include all the aspects and phenomena we think to belong it. As it happens, this traditional form of materialism fails to satisfy the so interpreted constraints. The mental items that cause most trouble to this form of materialism – let us call it TYPE A MATERIALISM¹ from now on – are QUALIA. Qualia are phenomenal properties; they are the what-it-is-likeness quality of our experiences. By definition they involve a subjective perspective since what my experience is exactly like can only be known by somebody who can undergo my experiences, but that is only me. There are many arguments involving qualia that actually



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show that type A materialism is false, but what is common to them is that, on the one hand, we are asked to keep the analysis constant, and on the other, to conceive of a change at the level of qualia. If we succeed in conceiving of such a change without being compelled to alter the analysis, then we have just shown that type A materialism is false. The most drastic change we can be asked to conceive of is the disappearance of qualia, that is, we are asked to conceive of a physical and functional duplicate of a person undergoing a phenomenal experience, which duplicate lacks phenomenal properties, a (philosophical) zombie, as philosophers like to call it. And, indeed, zombies are conceivable,² which means that type A materialism's analysis is unable to conceptually capture qualia. Qualia are not functionalizable. Arguments of this sort are called epistemic arguments or conceivability arguments against materialism. This is where TYPE B MATERIALISM enters the picture.

Recognizing the futility of the project of functionalization, type B materialism is a purely ontological thesis, namely that everything is modally, but not a priori, entailed by (micro-) physical facts. Let us explain this briefly. Let us say that p ENTAILS q iff $\lceil p \rightarrow q \rceil$ is necessary. Let us further define an argument having p as a premise and q as a conclusion as MODALLY VALID iff proposition p entails proposition q , which means that worlds at which p is true are also worlds at which q is true. Further, we say that p A PRIORI ENTAILS q if q is deductively inferable from p such that any further premise needed is a priori. An argument that has p as a premise and q as a conclusion, such that p a priori entails q , is A PRIORI VALID. Type B materialism accepts that facts about consciousness are not a priori deducible from physical facts, but insists on the harmlessness of this state of affairs since it implies only conceptual dualism leaving the ontology intact.

However, it seems that, even though prima facie successful in avoiding the attack from conceivability arguments, type B materialism – as it has been formulated so far – faces some problems when it comes to the constraints I mentioned at the beginning, of which I said that they are or should be commonly accepted. My aim here is to analyze and offer a solution to these problems. In what follows, I shall expose in section 1 what I think are the main shortcomings of type B approaches as they appear in the present

literature on the subject, and propose the view of physical constitution/composition instead of identity for phenomenal properties as a solution. Section 2 is devoted to a mereological theory of property composition. Section 3 considers some special issues of the application of this account to qualia and the idea of composition as applied to them. Finally, in section 4, I propose a way to approach conceivability arguments and try to show that they don't work in the case of a constitution-physicalism.

1. PROBLEMS WITH TYPE B MATERIALISM

I think that type B materialism is the right kind of thesis to be talked about as today's truly viable materialism. At the same time, many consider that there is room for dissatisfaction with what has been put forward under this heading. The first problem is that most accounts of this sort fail to satisfy our second constraint, namely to be a theory proper. They are mere reactions to epistemic arguments that insist on the irrelevance of conceptual issues to ontological ones. The thesis per se that everything is modally, but not a priori, necessitated by physical facts is patently non-explanatory. There is no theory behind it. It is just the assertion of a brute supervenience thesis. It is perfectly fine from the point of view of avoiding conceivability arguments to limit ourselves to saying that not every necessary conditional of the form $p \rightarrow q$, where p refers to a physical fact and q to any other fact, is a priori. But this should be one part of a defense of materialism since it doesn't offer any idea of why or how the physical facts should necessitate everything, including qualia.

One way to deal with the problem is to require type B materialism to move from supervenience to what Terence Horgan (1993) tastefully called *superdupervenience*, that is to a full blooded theory that would explain supervenience by putting forward specific physical laws that relate the supervening facts to the base facts. This way a necessary conditional like $p \rightarrow q$ would emerge as a conclusion following from premises referring to laws of nature. Let us call this "the physical law model of explanation", PLM for short.

I think PLM turns out to be a wrong choice for Type B materialism. This is because these laws seem to have an uncertain status when, for instance, they are required to relate physical and

phenomenal properties: are they physical or not? It seems that for physical modal necessitation to follow, these laws have to be laws of physics.³ At the same time, this implies a unity in the vocabulary across the relata of these laws, which is in contradiction with what motivates type B materialism in the first place, namely the radical conceptual gap between the physical and the mental. So, as far as I can see, PLM is not a way to resolve only the problem of a possible *metaphysical* gap between the physical and the mental, but a way to bridge the *conceptual* gap between them. But with that we are back to conceivability arguments that show the contrary.

Instead, I propose what I call “the ontological conjecture model of explanation”, OCM for short. OCM doesn’t require a new theory with specific laws to account for what appeared as a brute supervenience thesis, but only an analytical ontological conjecture, which, if doesn’t lead to either contradiction or inadequacy, can be taken as an explanation for the physical necessitation we were looking for. The most general such conjectures are, for instance in science, hypotheses about existence of entities, like the existence of neutrinos or of genes. But here we have a relation, that of metaphysical necessitation, so that an ontological conjecture has to posit a relation as well. And here comes the second problem of type B materialism.

Those accounts that are not simply reactions to conceivability arguments but conform to our second constraint, the theory or explanatoriness constraint, seem to insist on the wrong ontological conjecture, namely that the required metaphysical necessitation is explained by extensional identity between phenomenal and physical properties. So the general form of such a theory has two parts:

- a. *Irrelevance of the intensional gap*: physical and phenomenal properties are not a priori conceptually related by necessity, but that doesn’t show that they cannot be a posteriori metaphysically related by necessity.
- b. *Conjecture about the necessitation by extensional identity*: because of point a, the hypothesis that phenomenal and physical properties are identical is a possibility and represents an explanation for why and how phenomenal properties are physically necessitated.

The proposed conjecture is not fit for the task of explaining the necessitation for reasons that have already been highlighted by other

authors.⁴ I expose a more general form of the argument that if we are to give due weight to the phenomenology of our experience, extensional identity between phenomenal and physical properties is contradictory. Suppose first that we have a good candidate for the neural correlate of a phenomenal state and that we single out a physical/functional property *F* of this neural state. *F* will be referred to by a physical/functional concept *P*. The corresponding phenomenal property *G* will be referred to by another concept *Q*. The theory then asserts two main things:

- (i) There is no a priori conceptual link between *P* and *Q*.
- (ii) *F* is identical to *G*.

The theory is still incomplete since it has to offer an explanation for why (i) and (ii) can hold simultaneously. Since identity is necessary, the question is: why do we fail to observe this necessity at the conceptual level? The answer, since Saul Kripke (1980), is that identities can be necessary but a posteriori, like in 'heat = mean molecular kinetic energy'. Kripke offered an explanation why we fail to recognize these necessities and have the illusion of contingency, but that, as he correctly argued cannot be used by identity materialists. The explanation was that we confuse a contingent mode of presentation of, for instance, heat, like feeling of heat, with heat itself. Of course, it is possible that our sensation of heat be caused by something else than mean molecular kinetic energy, but that is not to say that heat itself would be identical to something else. Materialists cannot appeal to this explanation, saying that *Q* refers to a physical property but via a contingent mode of presentation, because they would have to assert that something can be felt as pain and not be pain. This would be contradictory since pain, and qualia in general, is just the feeling of pain, how it feels is essential to it.

Consequently, (as far as I know) all type B materialists today dispense without hesitation with the classic Kripkean explanation of our modal mistakes. Instead, they claim again two things:

- (iii) *P* and *Q* refer directly, not via a contingent mode of presentation
- (iv) *P* and *Q* are not a priori linked because (*put here a theory*)

I have explained why (iii) is needed to avoid some unwanted consequences, but the real trouble comes when we turn to the theories

that have been put between the parentheses of (iv). These theories are either unsatisfactory as regards our third constraint, namely the requirement of not neglecting any aspect of our mental life, or, if they satisfy the constraint, inconsistent with the initial conjecture about extensional identity. Examples from the first category are those which construe the opaque coreference of physical and phenomenal concepts on the model of opaque direct coreference of proper names (like ‘Marilyn Monroe = Norma Jean Baker’),⁵ those which construe it by making use of a radical difference in conceptual roles fulfilled by these concepts (something like ‘the concept that fulfills role R in a conceptual network N = the concept that fulfills role R* in a conceptual network N*’),⁶ or those which construe it on the model of coreferential bare demonstrative devices (something like ‘that kind of experience = that kind of property’).⁷ The problem with these accounts is that the better they are in explaining the lack of transparency in such cases of coreferentiality, the worse they are in conforming to a peculiarity of phenomenal concepts, namely that they don’t just barely refer, but they single out very vividly and directly the properties they refer to, the what-it-is-likeness of the states in question. To make my point more intuitive, I appeal to the Marilyn Monroe example to show the disanalogy. It is all right and true that the names ‘Marilyn Monroe’ and ‘Norma Jean Baker’ have nothing in common except the referent herself since one cannot see any link between ‘the interesting, famous, tempting, . . . actress’ and ‘the flat, anonymous, uninviting, . . . schoolgirl’. But it is also all right and true, according to the theory of direct reference of proper names, that ‘Marilyn Monroe’ has nothing in common with the properties singled out by the description ‘the interesting, famous, tempting, . . . actress’. But this is not all right and true for phenomenal concepts. They are not just barely referring, like ‘Marilyn Monroe’, but they take their referent directly, as it is essentially, that is as phenomenal. The very concept PAIN is essentially related to the feeling of pain. The same objection applies to the other aforementioned theories: they don’t respect the phenomenology of experience. With this, we have finally arrived at the last stage of the argument, namely the stage at which a type B identity theorist has to assert the following:

(v) Q takes its referent as it is in itself.

This is the last piece needed for showing the inconsistency of type B identity theory, namely (v) conjoined with (i) and (iii) imply the falsity of (ii), which means that the initial conjecture about extensional identity leads to contradiction. So if the theory is to give due weight to phenomenology, by recognizing as genuine (i.e., *phenomenologically appropriate*) properties those that are directly referred to by phenomenal concepts, it has to abandon the conjecture that these properties are the same as those referred to by the physical concepts used in relation to the neural correlates of qualia.

Does this mean that all hope is lost for type B materialism? I don't think so. The cause of the problems mentioned above is that the hypothesis of identity is not a good ontological conjecture since it does not satisfy the requirements I mentioned as criteria for a good OCM explanation: it either leads to contradiction (as we have seen once (v) has been asserted), or to inadequacy (as we have seen in the case when (v) is neglected). Consequently, I have to appeal to another conjecture, one that satisfies our requirements and by this gives an explanation for type B materialism's brute necessitation thesis. I think one such conjecture is that everything is physically constituted. More precisely, turning to our subject matter, one can put forward the ontological conjecture that it is not identity, but CONSTITUTION that holds between qualia and microphysical properties of the brain states.

2. CONSTITUTION AND COMPOSITION

Constitution has some nice features as applied to our problem: first, it is not a brute supervenience thesis, second, it is sufficiently weaker than identity to escape the problems we identified above, and finally, it is sufficiently strong for avoiding property dualism. The main problem with it is that while we have a pretty intuitive grasp on how objects are constituted, it is not at all clear how properties could be constituted, and for that matter how qualia, which are phenomenal properties, could be constituted. In the case of material objects we are standardly asked to think about a statue made of some stuff, for instance clay, and to observe that the statue and the lump of clay have different *de re* modal properties. Intuitively, there are conditions under which the lump of clay would survive the statue's

destruction: crush the statue with a hammer (or, if the clay is wet, level it to the ground) and observe that still the lump survived the drastic operation. The difference in *de re* modal properties is the main argument that there should be at all a relation of constitution between spatially coinciding objects, so I take it as a *condition* for constitution from now on. But it seems that we have to depart from this model in the case of property constitution since properties are abstract enough to causing us hard time in trying to figure out such drastic concrete operations in their case. As it will turn out, indeed, one cannot apply the basic condition of constitution to properties, but there is a close enough relation that can be equally useful for materialist purposes, namely that of composition.

For this reason, before exposing my own account, I will first briefly consider three models which, even if not accounts of property constitution per se, have the peculiarity of being able to relate (some) physical and (some) mental properties in a way weaker than by identity, but still keeping them tight together. I will call these direct accounts or PP accounts (from property-to-property). The first is the view that mental properties are second-order properties.⁸ The view is connected to functionalism, either to the software-hardware analogy of the mind-brain relation or to commonsense functionalism. Second-order properties are properties of properties, as opposed to first-order ones, which can only be instantiated by individuals. Color, for instance, is a second-order property in that it is instantiated by other properties like red or green, while the latter are instantiated by objects. As applied to our problem, mental properties would turn out to be, according to the broadly functionalist picture, properties of physical properties that have such-and-such causes and such-and-such effects (like stimuli and behavior). Maybe this is a fairly good picture of certain mental states like desires or beliefs, but I doubt its usefulness in analyzing qualia and its adequacy as an account of constitution. Its usefulness is doubtful because, as we saw, individuation of mental states by causal role, specific to type A materialism, would have to definitionally capture qualia, which is not the case, as shown by conceivability arguments. But be this as it may, even supposing we found some other than causal role based account of second-order property constitution by first-order ones, the model doesn't satisfy our condition of differ-

ence in *de re* modal properties. It is more intuitive to consider some more familiar properties for illustrating the point. Suppose I have a red T-shirt. *Redness* is exemplified by it, it is a first-order property, and *redness* in turn exemplifies *being colored*. Even if, as I complained earlier, properties are sufficiently abstract to suffer operations I imagined in the case of objects, we can still conceive that we can abstractly strip away all color from redness. If *redness* constituted *being colored*, then there would have to be conditions under which redness would survive this operation. Can we conceive of such a situation? I think it is intuitively clear that once I abstractly strip away all color from my red T-shirt, all its redness will vanish as well. *Mutatis mutandis* for qualia as second-order properties.

The same problems arise for the second account, according to which mental properties are to be conceived as determinables having physical properties as determinates:⁹ there is no way to abstractly strip away the redness from a scarlet shirt without thereby stripping away its scarletness. Moreover, I think that, apart from their usefulness as regards the logical analysis of property discourse, determinable properties are not in fact instantiated as such by individuals. It is only determinates that strictly speaking exist, determinables being not just, using David Armstrong's (1997, p. 45) expression, a metaphysical free lunch, but also an analytic free lunch since it is a priori that when an individual exemplifies, for instance, *scarlet*, it thereby *and only thereby* instantiates *red*. Not so with qualia. They seem to be truly novel properties, without any physical property description being able to a priori entail them.

The third model is that of structural universals. These are universals such that, necessarily, if an individual instantiates them, then it has proper parts, each instantiating a simpler universal. The problems are more delicate here since there are various ways to understand structural universals. I will follow David Lewis (1986), and consider three ways to understand structural universals: linguistic, pictorial, and what he calls "magical".¹⁰ The linguistic approach is based on a mapping between linguistic constructions of complex predicates from simple ones to the ontological domain. The shortcoming of applying this understanding to our case is obvious: as Lewis puts it, it is hard to see how structural universals could not exist. That is, again, it would follow a priori from the existence

of simple ones that such complex properties exist. The pictorial conception requires that simple universals be literally mereological parts of structural ones. To take an example, the universal *methane* would be composed of the simpler universals *hydrogen*, *carbon*, and *bonded*. Lewis dismisses such a view on grounds that (i) it is hard to make sense in mereological terms of how a structural universal could have a simpler one as part not just once, but four times over (in the case of *methane*) or twice over (as in the case of *water*) and that (ii) it does not conform to the principle of uniqueness of composition, according to which there cannot be two distinct individuals composed of the same parts. To take an example, both *butane* and *isobutene*, clearly different universals, would have as parts *carbon* four times over, *hydrogen* ten times over, and *bonded* thirteen times over. The magical conception would take composition of properties by other properties non-literally. According to it, structural universals are mereologically atomic, but they are not simple at the same time. Simpler universals that compose them are not literally mereological parts of them. Lewis (1986a, p. 41) expresses a strong dissatisfaction with this view, applying it to the example of *methane*:

Therein lies the magic. Why *must* it be that if something instantiates *methane*, then part of it must instantiate *carbon*? According to the linguistic conception, that is built into a recursive specification of what it means to instantiate *methane*. Fair enough. According to the pictorial conception, that is because *carbon* is part of *methane*, and the whole cannot be wholly present without its part. Fair enough. But on the present conception, this necessary connection is just a brute modal fact.

As it will turn out, such modal facts are what we need for the present purposes. What I will ultimately appeal to in what follows can be seen as a combination of some elements from both the pictorial and the magical conception. Also, modal facts, if not brute as such, will certainly not be a priori analyzable.

I have to confess that I cannot figure out how a property could constitute another, and also that I cannot offer any model in which our condition of difference in *de re* modal properties would be satisfied by a pair of properties. But I propose a model according to which many properties can compose many. I will call this an indirect or POP (from properties-to-object-to-properties) account.

First, let us turn back to the lump-statue case. Though our usage suggests that in this case there is an object constituting another, this is not really so. I think constitution involves MEREOLGY,¹¹ namely in order for an object to be constituted it has to fuse some spatial parts. The statue is constituted by the lump because the lump is not an object proper, but a stuff, namely clay, so that the correct usage would be that it is the clay stuff that is statuely fused when there is a clay statue. The relation between LUMP and CLAY STUFF is identity. STATUE, on the other hand, for reasons I gave earlier, is not simply clay stuff but a statue-ly arranged clay stuff. In virtue of what can the clay stuff be statuely arranged? When the clay stuff is wet, it is plastic, so that a sculptor can transform a lump of clay into a beautiful statue. What he does is a rearrangement of the material parts of the lump. The statue and the lump thus share all their spatial parts. So an object has to have parts in order to be suitable to be a relatum in a constitution relation. Once we accept this, it should be no wonder why all PP accounts are nonstarters. But also the main problem emerges: how could a property have parts? It certainly can't have parts literally and I also find it hard to tell you a good metaphor for how it could have them figuratively. Properties seem to be simples. One can, of course, accept the existence of CONJUNCTIVE PROPERTIES (though I doubt their existence), but they are not relevant for our issue. Conjunctive properties are those that are referents of predicates obtained by applying the operator '&' in the normal truth-functional way to two or more other predicates. For example, an apple may exemplify the property of *being red and round*. Property conjuncts are indeed parts of conjunctive properties, but they are of no use for our problem: if an object *x* is red and it is also round, then its being red-and-round is, again, an analytic free lunch. More importantly, property conjuncts are not themselves compound and qualia certainly seem not to be compound properties. But even if the case of conjunctive properties doesn't help in offering a case for how simple properties could *have* parts, it is important that it shows that simple properties could *be* parts. This is important for what I want to propose as an account of, if not constitution per se, property composition.

As I have earlier said, we need mereology for constitution, but we don't have an idea of a PROPERTY MEREOLGY OF PROPER-

TIES, that is of properties (other than conjunctive ones) as fusions of properties. Nevertheless, I think we can figure out an indirect way to illustrate cases of property constitution, once we have a PROPERTY MEREOLGY OF OBJECTS, that is an account of objects as fusions of properties. In a recent paper, Laurie Paul (2002) proposes such a view. What she does is to bring the BUNDLE THEORY OF OBJECTS under the aegis of Mereology.¹² The idea is that it makes sense to talk not only of objects having spatial parts and being fusions of these parts, but also of qualitative parts. We can abstractly take an object apart along its qualitative features in a way that renders its qualities summable¹³ individuals. My red T-shirt will then have *redness* and *T-shapedness* as qualitative parts. But since my T-shirt also fuses spatial properties like *being located at*, we need a more general kind of individuals than qualitative individuals, and these Paul calls LOGICAL PARTS. Thus an object will be a fusion of logical parts. If one prefers unrestricted composition, then any collection of properties will compose a fusion. To account for the fact that not all property fusions will be *objects*, one needs a primitive predicate, like “being together”, or a primitive relation of *togetherness*, which applied to a collection properties has the result the singling out of an object. As regards constitution, since logical parts include *de re* modal properties, it is now accounted for by way of a mereological difference: when a lump of stuff S constitutes an object x they share nearly all their logical parts (certainly spatial parts, having mass m, . . .) but not all.

If we have a property mereology of objects, then we can derive from it a solution to our problem, namely to a possible property-mereology of properties. The basic idea is to keep spatial mereology and logical mereology separate. First, let us define MERE-OLOGICAL ATOMS as those parts of an object that don't have parts themselves. Concrete examples are fundamental microphysical entities, like electrons (supposing they are basic). Second, turning to the proper part-whole relation, we have to keep in mind that it is irreflexive (x is not a proper part of itself), asymmetric (if x is a proper part of y, then y is not a proper part of x), and transitive (if x is a proper part of y, and y is a proper part of z, then x is a proper part of z). It is important that the property of transitivity will hold *in each* mereology, spatial and logical, but not across them,

that is in cases when we have to combine them. Third, we say that an object x fuses a set A (or A composes x) iff all members of A are: (1) non-overlapping, (2) parts of x , and (3) all parts of x overlap some member of A .¹⁴ Now take an object O , say a one cubic meter copper cube, and suppose Cu atoms are its mereological atoms.¹⁵ O spatially fuses its set of mereological atoms S having as elements $(x_1 \dots x_n)$. At the same time, according to our mereological bundle theory, each element x_i of S logically fuses another set S_i^* of *properties*, having as elements basic microphysical properties $(F_1 \dots F_n)$. Call the set having as ur-elements the elements of all such sets S^* . Since each S_i^* logically composes an element x_i of S , S^* composes the fusion of all such elements, that is S^* composes the fusion of S , that is our object O . This means that if basic physical properties logically compose spatial mereological atoms and these mereological atoms spatially compose ordinary objects, then, even if transitivity cannot be appealed to, there is a sense in which basic physical properties compose ordinary objects. But if it is true that objects are also fusions of properties, then, since O as a whole is nothing else but a bundle of properties $(G_1 \dots G_n)$, like *cubicness*, *reddishness*, etc., we can say that properties $(G_1 \dots G_n)$ are globally, or as a family, *de facto* composed of properties $(F_1 \dots F_n)$. This is a basic POP model of property composition by properties.

Certainly, the properties satisfying such a relation are not identical, but one could say that since I arrived at the conclusion that F s compose G s by a priori reasoning, there is an a priori connection between F s and G s, which is bad for me if I want to offer a model for physically constituted qualia where we shouldn't have such a priori connection. There is a grain of truth in this, but the sense in which it may be true requires a formulation that, as I will later argue, is harmless. For the moment, I want to show that as it stands this claim is false. What I have in mind when I think of G s, is that they are properties that directly logically compose the object as a whole, as opposed to F s, which compose spatial parts of the objects, which in turn compose, "from below" so to say, the object, and thereby the properties whose togetherness the object is. G s are properties like color, shape, solidity and there is no a priori conceptual relation between them and F s, which I understand as microphysical properties. Following Nelson Goodman ([1951] 1977, p. 38), I will define

the extrasystematic term **DISSECTIVENESS** as a property of only those predicates that are satisfied by every part of every individual that satisfies them. For example, ‘is smaller than Hungary’ is a dissective predicate since every part (proper and improper equally) of every individual that is smaller than Hungary is also smaller than Hungary. From this, I then define three kinds of **NONDISSECTIVENESS**, two general and a special one. A monadic predicate *P* is said to be:

Strongly nondissective iff there is no proper part of any individual that satisfies it, such that it satisfies it.

Weakly nondissective iff there is at least one proper part of at least one individual that satisfies it, such that it does not satisfy it.

Atomically nondissective iff there is no mereologically atomic proper part of any individual that satisfies it, such that it satisfies it.

I will say that properties are nondissective in the above mentioned three possible ways when they are referents of predicates that are nondissective in those ways. A possible property of our copper object *O* is *redness*. It is not strongly nondissective since there are parts of our copper cube, for example half of it, that are also red. But it is weakly nondissective and more importantly atomically nondissective: copper atoms are hardly red. For this reason, even if by a priori reasoning I can arrive at the result that the copper object’s redness is part of a togetherness class *S* of *G*s (macro properties) that is composed of the togetherness class *S** of *F*s (micro properties), in no way will this enable me to a priori deduce the qualitative aspect of redness from a set of microphysical properties. What I can a priori deduce from microphysical properties is the existence of an object, that is of a togetherness class, but what properties will this class have as elements I won’t be able to tell a priori.¹⁶

We can then say that modal but not a priori entailment by physical properties in the case of qualia is a type of nondissective composition, qualia being just atomically nondissective properties like *red*.¹⁷ One can also call it “opaque composition”. But an objector can say that even if nondissectively composed, still these micro properties

can be said to be “*redness* together”. That is the fact that no single mereological atom can have redness as a logical part doesn’t imply that their logical parts together cannot be equivalent to *redness*. This depends on how we are to understand “together”. The predicate ‘is red’ is monadic, while ‘are red together’ is variably polyadic. The question is: how can one a priori deduce a monadic property from a variably polyadic one? I think this is really a problem for physicalists who want to explain qualia by a set of neural properties and I will call this “the monadicity problem”. A solution to this problem has to consist in ensuring unity either on the side of the *exemplifier* of the property referred to by ‘are F together’ or, by abstracting away any object, on that of the *properties themselves*. In the first case, since unity of the exemplifier is most naturally ensured by fusion, saying that Fs are red together would be equivalent to saying that the object is red. But since the object is nothing else but a fusion of a togetherness class containing *red* as a part, it would turn out that the resulting apriority is useless: ‘the togetherness of *red* and G_1 and . . . and G_n is *red*. In other words, ‘The red copper is red’. This is a priori but doesn’t mention any microphysical property. In the second case, we have to ensure unity on the side of the property. I don’t see how else than by conjunction. Thus, we will have a conjunctive property with many conjuncts, F_1, \dots, F_n . The problem is that no amount of narrowly physical property conjuncts will make the compound property identical to a macro property like *red*. So here the problem is that macro physical properties are not even mentioned.

Let us then consider some issues concerning the relation between the composing properties and the composite ones in the present discussion, and their relation to constitution. I mentioned some problems with the intelligibility of the property of *being red together*. Instead, I use the formulation ‘Fs are redly arranged’.¹⁸ Turning back to the lump-statue case, we can say that at a time t , if there is a statue, there are mereological atoms x that compose both the lump of clay and the statue because x s are statue-ly arranged. Lacking a better name, I will call the abstract region of logical parts of the statue that horizontally compose the statue’s shape and other sensible qualities as such (i.e., its shape and other qualities mentally abstracted from their material support), the ADVERBIAL REGION (from the adverb ‘statue-ly’) of the statue. Then, at time t ,

the lump and the statue share the same mereological atoms and the same adverbial region R. The reason why we can speak of the lump constituting the statue is that at any time of its existence, LUMP will have an adverbial region R^* which is possibly non-identical with R, while at any time of its existence STATUE will have an adverbial region R^{**} which is necessarily identical with R. In other words, at a time t, if the statue exists, LUMP and STATUE share all their qualitative properties, but R is not part of LUMP's essence while it is part of STATUE's essence. That is to say it is essential to a statue to be, say, statue-shaped, while it is not so for a lump of clay.

Then, according to my model, qualia are to be construed on the model of adverbial regions of stuffs. But is it not the case that while we have an intuitive grasp on the lump being a mere lump and statue being more than it (for example it has very different aesthetic properties from those of a mere lump), when we think of the mere lump, we can say that it is a mere aggregate of lump molecules? This is not so. It is also true that there is something special about the lump: its molecules are lump-of-clay-ly arranged. The lump is not a *mere* fusion, but a “nice fusion”. I prefer unrestricted composition, the principle that any composition is a fusion; any two individuals, however distant or distinct, have a fusion. At the same time, I think that there are fusions which may be called NICE PARTS¹⁹ of other fusions. For example, my left ear and the lighter in front of me can compose a fusion, and this fusion will have as nice parts my left ear and the lighter. Further, the set of molecules of my ear and that of the molecules of the lighter have a fusion M and there are certain ways to compose these molecules having as a result fusions M_1 (the ear-ly fusion) and M_2 (the lighter-ly fusion), that are nice parts of M. Of course, there are situations when M doesn't have M_1 and M_2 nice parts: for instance if the same molecules (and supposing that they are mereological atoms) are dispersed infinitely and uniformly in the universe, then M still exists but its only nice parts would be its simples, its mereological atoms.

Finally, we could wonder about niceness in our POP model of property composition. Which property fusions will result in some nice spatial parts? What would result from fusing just a subset of the properties that de facto logically compose the spatial parts that compose the object? These questions are hard to answer. In the

case of an object, like our copper cube, we only know that some of its properties are singling out well understood entities, like its atoms' having the atomic number 29, and its being reddish-brown, but we cannot figure out what is in between. Hence, rather than coming as an analytical free lunch from its mereologically atomic logical parts, it seems that the constituted adverbial properties of an ordinary object emerge from them through a large and fuzzy ontological limbo.

3. QUALIA AS HYPERPERSPECTIVAL BRAIN STUFF

Applying the POP model to qualia we can take these as parts of the adverbial regions of the neural correlates of them. But how can this be so? In case of objects it is clear that their adverbial regions like, their color and shape, are presentations of the object, but in our case there seems to not exist any object with such properties as, say, being felt as the experience I had yesterday as of a red apple. Where is here any object felt like this? Strange as it may sound, I will say that the brain is felt like this. Rather than construing the mind on the model of the computer, I advance the analogy with ordinary material objects, and the hypothesis that *literally* the mind is constituted by the brain just as the statue is constituted by the lump of clay. In order to explain this idea I have to return to ordinary objects. The adverbial phrase used to formulate composition of macro properties by micro properties is meant to capture a peculiarity of how we describe the objects having these properties. Let us consider a stuff; for instance, water. According to the present model, water is watery stuffly arranged H_2O , where 'watery stuff' is a contraction of a description like 'the colorless, odorless, transparent liquid of our acquaintance'. It is not only H_2O , but a nice fusion of H_2O . Being a nice fusion has some important implications. In order to correctly pick out water by a definite description, we need to use some information that will fit not only water's fusing H_2O , but also, and very importantly, water's fusing H_2O *nicely*, that is watery-stuff-ly. The total sufficient information for picking out water at any world will have to include bits of what may be called "perspectival information". Perspectival information is that which uses concepts whose being used at all competently depends on the speaker's being

in a certain perspective vis-à-vis the referent of that concept. For example RED is a concept that cannot be competently used by somebody who is color-blind from birth. But here something more is involved: narrowly physical information is not sufficient to pick out an ordinary object or stuff since it lacks those bits that can only be used if you assert them from a macro perspective. For example, the atom-by-atom description of an elephant fails to mention essential properties of the elephant, like its having a long prehensile trunk that is trunk-shaped. This is to say that our adverbial formulation is a way to link narrowly physical with perspectival information, like in ‘watery stuffly constituted H₂O’, where the adverbial part of the phrase is a linguistic counterpart of the macro properties referred to by the phrase. The description ‘the colorless, odorless, transparent liquid’ involves properties that cannot be picked out by the speaker unless she is in such a perspective vis-à-vis the stuff as to be able to competently use these words.

Then I claim that just as we need to place ourselves in a certain perspective in the case of describing ordinary objects, we also need to place ourselves in a certain perspective in the case of describing our own experiences. In the case of ordinary objects we can describe them by looking at them from a certain distance in normal conditions. And we can be many people, say a group of friends, and agree on the features of the object we see: one of us will say “it is round”, the other “it is green”, etc., and an agreement may emerge as that we experience a green ball. What is special about our own subjective experiences, and this makes it hard to swallow that in fact what-it-is-likeness is a presentation of the brain cell stuff, is that the perspective from which we describe them cannot be occupied by anybody except ourselves. What I experience from my subjective perspective cannot be made more or less justified by reference to other observers. Water is presented to us as the watery stuff and our relation to water is a third-person one. By (dis)analogy, our first-person experience of our own brain cell stuff is like how I would experience water if *I would be the water*. Once I experience my brain from the first-person perspective, I cannot experience it as brain stuff: the two perspectives are mutually exclusive. This is why I call the information needed to describe my brain cell stuff from the first-person perspective HYPERPERSPECTIVAL. This hyper-

perspectivalness is not without analogy. We can find something like this in the literature on arguments to the existence of God from the fine-tuning of our universe. It is argued by theists that since life-permitting universes can only emerge from certain events during the Big Bang, characterized by some very determinate physical magnitudes such that even a tiny variation in the values of these magnitudes would have had as a result a lifeless development of the universe, there has to be a divine creator who set those initial conditions in such a way as to permit life, otherwise it is just very improbable that the universe came into existence by itself with those fine-tuned values. There are philosophers who defend the thesis that this would be much less improbable if we realized that our universe is just one among a large number of universes each with different initial magnitudes and lifeless thereby. And here is where hyperperspectivalness enters the picture: the multiverse hypothesis is not verifiable, because if we were able to prove the existence of any other universe, we would have to be there, which means that the universe would be life-permitting. This is a very serious observational selection effect: if we want to give evidence for the hypothesis based on observation, then by the very making of the observations we render impossible any gathering of evidence.

So something like this goes on with qualia. My ontological conjecture is that qualia are physically composed properties in the specific ways my POP model points out in the case of ordinary objects. At the same time, the very fact that qualia are those properties of the brain that can only be picked out by hyperperspectival information makes us unable to prove that they are so constituted. If I have an experience as of a red apple, then, I say, my brain is red-apple-ly appearing to myself. I am oriented towards the external object, but without noticing, I am hyperperspectivally experiencing my own brain as red, round, etc., and it is only to me that my brain at this moment is so presented. If I ask somebody to open my skull and look at my brain, he will not experience my brain in this way, but as a wet grey stuff.²⁰ If my brain is linked by electrodes to a computer that displays digital images of my brain when I experience the red apple, then, if I turn my head to see my brain on the screen, I will have already made a perspectival transgression: now my brain is already digital-image-of-my-brain-ly constituted (i.e., appears to

myself so). If somebody is able to understand the mechanism that works here, that of hyperperspectivalness, she will not regard as “exotic” what I have earlier said: literally the brain constitutes the mind, just as the lump of clay constitutes the statue.

4. THE 2-D ARGUMENT AGAINST MATERIALISM

I think that the ordinary object model of the mind is much better than the computer model (more generally, the second-order state model) when it comes to resisting conceivability arguments. We can observe that the present model should be better in this respect: (1) it is based on constitution, not identity, so it escapes problems I discussed in connection with type B identity theory (the essential phenomenality of phenomenal concepts and its implications), (2) because of phenomena like nondissectiveness and hyperperspectivalness, it is not committed to a priori necessitation like type A variants, (3) physical necessitation follows from an ontological conjecture, it is not just brutally stated, finally, (4) my conjecture, if true, makes explanation of modal problems related to the mind-brain relation as part of the explanation of modal problems related to ordinary objects.

For example, related to the last point, we don't have to be afraid of Kripke's explanation of our illusions of contingency, fearing that we may have to assert the contradiction that something can be felt as pain and not be pain. I can say that, since a pain is a feeling-of-painly composed set of brain processes, two pains can have the same adverbial region (the feeling of pain) but different constituting physical properties, so that what I have to assert is that something can be felt as this pain (which I feel now), but not be this pain (not have the same constituting part as the pain I feel now has), just as something can be *that-statue*-ly arranged but not be that statue (it can be made of another stuff). Then, of course, just as something cannot be statuely arranged and not be a statue, something cannot be felt as pain and not be a pain. As far as I can see, the cases are absolutely symmetric. The difference between qualia as adverbial regions of brain processes and ordinary macro properties as adverbial regions of some microphysical properties of ordinary material objects is that brains are special in that their microphysical properties can have an

extra presentation, the hyperperspectival one. This means that we can still give the standard Kripkean explanation of the illusion of contingency. Since Kripke discusses pain in general, we can also say that something can resemble a certain pain feeling, i.e., it is a pain, but not be the same hyperperspectivally accessed pain feeling. I will consider now what in my opinion is the most sophisticated conceivability argument put forward so far, the argument from TWO-DIMENSIONALISM, due to Chalmers (1996, 1999, 2002a, 2002b), and Jackson (1992, 1994, 1998). Without explaining all the intricacies of 2-D semantics, we have to get a rough idea of it, in order to understand Chalmers' argument. We have to understand the difference between the PRIMARY INTENSION and the SECONDARY INTENSION of concepts. The first refers to the a priori aspect of meaning. When we are asked about the meaning of 'water', for instance, what we a priori know about water enters the primary intension of the term. The primary intension of 'water' is settled in the actual world (it can also be called actual intension), by the description 'the clear, transparent, potable liquid, that flows in rivers, falls as rain, . . .', 'the watery stuff', for short. The secondary intension, on the other hand, is evaluated at counterfactual worlds once we rigidified upon the concrete actual stuff corresponding to our description 'the watery stuff', that is we consider a counterfactual world in which the description 'the watery stuff' is verified, but in which the watery stuff is constituted by, say, XYZ, not H₂O. The secondary intension of 'water' is 'H₂O' since in the actual world it is H₂O which constitutes the watery stuff, so that the truth-evaluation of a statement containing the term 'water' at counterfactual XYZ-worlds will yield always the truth value FALSE. For example, the statement 'Water flows in rivers' is true in the XYZ only if H₂O flows in rivers in that world. The secondary intension of a term is the a posteriori aspect of its meaning. Then we can define four types of statements with respect to the necessity/contingency and apriority/aposteriority divides in terms of primary and secondary intensions of the terms contained in them:

1. A priori necessary = necessary primary and secondary intensions. Ex: 'Water is water'.
2. A priori contingent = necessary primary and contingent secondary intension. Ex: 'Water is the watery stuff'.

3. A posteriori necessary = contingent primary and necessary secondary intension. Ex: 'Water is H₂O'.
4. A posteriori contingent = contingent primary and secondary intensions. Ex: 'The watery stuff is H₂O'.

We can say, simplifying a bit,²¹ that a term's primary intension yields a superficial presentation while its secondary intension a constituting essence. We can now turn to Chalmers' argument. What is important for our purposes is the third category, that of a posteriori necessary statements, since type B materialism is an a posteriori physical necessitation doctrine. Type B materialism says that $\lceil P \rightarrow Q \rceil$ is a posteriori necessary, where P refers to all the microphysical facts and Q to any other fact including phenomenal facts. Now, according to the 2-D analysis, if $P \rightarrow Q$ is a posteriori necessary, then it has a contingent primary intension. This means that, denoting the primary intension of a concept C with C*, there exists a world W where P* is true and $\sim Q^*$ is also true, that is where the primary intension of our total microphysical information is true without the primary intension of our phenomenal information, P* & $\sim Q^*$. But in the case of physical concepts like H₂O the primary and secondary intensions coincide ($P = P^*$), from which we have P & $\sim Q^*$. Moreover, since the primary and secondary intensions of phenomenal concepts also, most plausibly, coincide ($Q = Q^*$), that is if something is felt as pain, then it is a pain, then we obtain P & $\sim Q$. This last formula is no more one about presentations but about bona fide facts, that is, it falsifies materialism. More formally, letting P to refer to all physical facts, Q to a phenomenal truth and P* and Q* to their primary intensions, the argument is this:

- A: (1) Possibly, (P* & $\sim Q^*$).
 (2) $P = P^*$.
 (3) Possibly, (P & $\sim Q^*$). (4) $Q = Q^*$.
 (5) Possibly, (P & $\sim Q$).
 (6) \sim Necessarily, ($P \rightarrow Q$).

An instance of P & $\sim Q$ is the possibility of zombies, so the conclusion is that materialism is false.²²

The first observation to be made about argument A is that this very argument can also be applied in order to show that it is possible that everything is microphysically as in our world, but there are no objects, like chairs or tables. This is so because the concept of

a chair, for instance, will include non-microphysical information, perspectival information, as I mentioned earlier. This will be information about the chair's appearance. If you replace Q by a truth m about a chair, then the conclusion is ' $P \ \& \ \sim M$ '.²³ To be sure, this is an anti-physicalist conclusion, namely one according to which the existence of no macro object is necessitated by the existence of its component micro entities.

The question is why we still have an intuition that if there is a world microphysically like ours, there is a chair. The answer cannot be that it is because ' $P \rightarrow M$ ' is a priori, because it is not; such a conditional is at best a posteriori necessary. And if argument A is sound, it is a posteriori contingent. So maybe the answer is that offered by Chalmers and Jackson (2001), that M can be derived a priori from P if certain other information is added to P. In other words, there is some information such that if it is used, there is an a priori passage from P to M. The extra information is T (a totality claim like "and that's all" in order to rule out possible "ghost stuff"), I (indexical information, like "I am on Earth"), and Q (information about the phenomenal appearance of the things in the environment). Of course, Q will contain phenomenal concepts, which are not a priori entailed by P. So, the argument goes, the only reason why argument A works for macro truths, showing that they are not necessitated by micro ones, is that we need to make reference to phenomenal concepts and properties in order to show the contrary, and they are not themselves a priori entailed by P, therefore anti-physicalism about ordinary physical objects is derivative on the anti-physicalist conclusion about Q. So it seems that Q is indeed the only trouble-maker for the materialist's purposes.

But as I see, in fact, there is no reason, *as far as the conceivability argument goes*, to doubt that the broader anti-physicalist conclusion. I think the question is what grounds, besides the thesis that any necessity should be known a priori, do we have for thinking that the microphysical facts do not necessitate ordinary macro facts. And the answer is that we have no other grounds. At the same time, think about a zombie world, a physical duplicate of our world, in which people lack conscious experience. It should not *prima facie* appear to us as a world with no chairs. We have an intuition that the mere fact that zombies lack the relevant concepts for building the a priori

passage from P to M, via T, I, and Q, does not make their world one that lacks chairs. Similarly with us, even if we cannot derive Q a priori from P, and thus a conditional like $P \rightarrow M$ is not a priori, this does not stop objects composed of entities referred to by P to necessarily exist whenever their constituent parts exist, even if $P \& \sim M$ is conceivable.

Turning back to argument A, it is pretty clear that in order for it to not apply to ordinary macro truths M, one of the following has to be true: either that $P \& \sim M$ is not conceivable, or that its conceivability does not entail its possibility. It seems that P is conceivable without M. There is nothing in purely microphysical concepts that would give the slightest hope to derive some macro truths. Indeed, as I stressed in the case of composition for properties, once we have certain bundles of microphysical properties composing microphysical parts of macro objects, we also have a bundle of macro properties composing the same object, but there is no conceptual connection between these two groups of properties. Can P alone bring us to macroscopic information? Of course not: P brings only microphysical information.

Then argument A is not central to the attack on materialism about phenomenal properties. Instead, the following is the argument: for any truth M there is an antecedent of the form PQTI such that it a priori entails M, but for a phenomenal truth Q there is no such antecedent.

If one accepts to construe the mind on the model of ordinary objects, as I do here, then such an application conditional could be construed: $PQTI \rightarrow Q$. Of course, Chalmers and Jackson will immediately object that this is trivial, while $PQTI \rightarrow M$ was not. That was a piece of reductive conceptual analysis. But note that, though this conditional *is* trivial, I am not trivializing anything. I only say that in the case of phenomenal properties we would have to put forth something like:

- (*) if C-fiber firing is singled out as the process responsible for my feeling conscious, then it is a priori that “if C-fiber firing takes place and I feel conscious (or, if you want, “if C-fiber firing is my-feeling-conscious-ly composed”) then I am conscious”.²⁴

Using our notation, this should be written as $PQ*TI \rightarrow Q$. Then, of course, it will become trivial, but just because of the

nature of the phenomenon we analyze: after all, it is nobody's fault that phenomenal concepts have coinciding primary and secondary intensions.

Then, the anti-materialist strategy reduces to the fact that while in the case of, say, water we can gather a series of information, including bits of phenomenal information, which will non-trivially a priori entail that there is water, in the case of phenomenal properties we can't. But we knew this from the very beginning. We knew that water, chairs, tables, etc. are just the kind of third-personally describable things and that consciousness is a first-person, subjective phenomenon. No type B materialist claimed to give a third-personal, "heterophenomenological" (Dennett, 1991) analysis of consciousness. Indeed, just the opposite, the lack of such analysis is the distinctive feature of type B materialism. This is why type B materialism is more reasonable than type A.

I conclude that the 2-D argument above can indeed show that phenomenality is epistemologically fundamental: we cannot infer any macroscopic truth without making use of phenomenal concepts; once we introduce them, we solve the epistemological problem. But, if our hypothesis about qualia as physically composed internal presentations of the brain is true, that is no indication of their also being ontologically fundamental. As it stands, the argument, if sound, does not show anything especially about consciousness. If made explicit to show indeed something only about consciousness, the argument shows that it is a subjective phenomenon, which is nothing really bothering for the type B materialist: it only shows without any doubt that type A materialism is not adequate.²⁵

NOTES

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¹ Following David Chalmers (1996, 2002a).

² In the sense required for refuting functionalism, that is, zombies are not ruled out.

³ If not physical necessitation, but only nomological co-variance were required, then these “superduper” laws would not have to be physical, they could be laws of a more fundamental science than physics, explanatorily relating physics to any other subject matter.

⁴ Chalmers (1999), Howard Robinson (2001), Terence Horgan and Jonh Tienson (2001).

⁵ David Papineau (2002, chapter 3).

⁶ Brian McLaughlin (2001).

⁷ Brian Loar ([1990] 1997).

⁸ Hilary Putnam ([1967] 1975), Ned Block (1990).

⁹ Stephen Yablo (1992).

¹⁰ I am not interested here in what a good construal of structural universals should look like, or in whether structural universals exist or not. The present brief review is concerned only with the problem of modal entailment without apriority. In fact, the debate on structural universals started by Lewis is concerned exactly with the opposite, with how to construe structural universals in such a way that modal entailments are conceptually analyzable. Besides Lewis (1986a, b), see Armstrong (1986), John Bigelow (1986), Bigelow and Robert Pargetter (1989), and Peter Forrest (1986).

¹¹ A formal theory of part and whole first developed by Stanislaw Lesniewski between 1927–1931. Most well-known expositions are Nelson Goodman and Henry Leonard (1940), A.N. Prior (1955), and Goodman ([1951] 1977).

¹² That objects can be considered mereological fusions of properties was also suggested by D.C. Williams (1953) as part of his trope-bundle theory and as a solution to the problem of gluing together tropes so as to have a proper reduction of objects to tropes, but without further elaboration and consideration of certain problems that might emerge.

¹³ Not only summable, but also, importantly, *shareable*. This is the way in which the logical mereology proposed by Paul is a way to transcend the long lasting debate between particularist and universalist bundle-theorists, the former advocating a view of objects as bundles of properties that are themselves first-order particulars, the latter a view of objects as bundles of universals. In Paul’s system, there is no conflict in this respect since properties are bona fide shareable parts, shared particulars.

¹⁴ I owe this definition to David H. Sanford.

¹⁵ It is not essential to use mereological atoms for the present analysis. It can also be run by assuming the existence of infinitely divisible matter, atomless gunk. One just needs to cut into a suitably micro level of composition from which to run the analysis towards the level of manifest properties of ordinary objects.

¹⁶ Except when some nondissective property is linked with its constituent properties by an explicit definition. For example, *being a group* is so linked with the togetherness of (*being an individual*, *being located at . . .*, *being located at . . .*, and so on): although no individual is a group, a group is defined as a collection of individuals.

¹⁷ Another property that should be addressed here is that of additivity. Determinate quantitative properties are additive in the following sense: if an individual

x instantiates *having mass m* and another, y , instantiates *having mass n* , then their sum $x + y$ will instantiate *having mass $m + n$* . Of course, then qualia will not be additively composed properties. When I talk about nondissective composition, this should be understood as also involving non-additivity.

¹⁸ A formulation similar to what Peter Van Inwagen (1990) adopts, but for nihilist purposes. He argues that there are no composites except living beings, like persons, the rest are simples, mereological atoms.

¹⁹ The notion of nice part is introduced by David Lewis (1991, p. 22) as a mereological emulator of the notion of member from set theory. It ensures uniqueness of decomposition, unlike the notion of a part, since there are many ways to decompose an object into parts. I use niceness here more metaphorically, as a way to distinguish mere fusions from orderly aggregations.

²⁰ Bertrand Russell ([1927] 2001, pp. 382–323) notes this: “The usual view would be that by psychology we acquire knowledge of our ‘minds’, but that the only way to acquire knowledge of our own brains is to have them examined by a physiologist, usually after we are dead, which seems somewhat unsatisfactory. I should say that what the physiologist sees when he looks at a brain is part of his own brain, not part of the brain he is examining”. To be sure, Russell in the end defends a view that is closer to anti-materialism (see footnote 21).

²¹ For a better and more complete understanding of primary intension and the 2D framework, one should consult the aforementioned references to Chalmers.

²² There is, however, another alternative. This is what Chalmers calls PANPROTOPSYCHISM A view we can also attribute to Russell ([1927] 2001). It can be construed in two ways: either (α) as P^* referring to the standard properties accounted for by physics and P to some unknown intrinsic protophenomenal properties that would explain both the physical and the associated phenomenal properties, in which case zombies are possible according to the primary intension of P but not to the secondary intension of it, or (β) as P and P^* coinciding but referring to both physical and phenomenal properties, so that the physical concept P would also single out phenomenality in the physical reality it is normally meant to describe, in which case zombies are not even conceivable, because a complete physical description of the world would have to also single out intrinsic and arguably phenomenal properties (see also Chalmers (2002a) where he discusses type F monism).

Daniel Stoljar (2001) puts forward such a view of the physical realm, which he calls the object conception, as opposed to the theory conception, of the physical. Chalmers is sympathetic to this view, seeing in it a variant of the panpsychist alternative he already put forward in his (1996) or some neutral monism, but Stoljar protests against this interpretation, saying that Chalmers misses the distinction between object-physical and theory-physical properties. I think the troubles are caused by the fact that Stoljar subscribes to the views of Chalmers (1996, 1999, 2002a, 2002b) and Frank Jackson (1998) that if physicalism is true, then it has to be true in its a priori form. If, as Stoljar, Chalmers, and Jackson think, we stick to the idea that if true, physicalism is a priori, then we have the following dilemma for the physicalist:

either (α): $\sim (P = P^*) \ \& \ (P^* \ \& \ \sim Q^*) \ \& \ (P \rightarrow Q)$ from which [NEUTRAL PROTOPHENOMENALISM]
 or (β): $(P = P^*) \ \& \ [P^* \rightarrow Q^* \ (a \ fortiori \ P \rightarrow Q)]$ from which [PANPSYCHISM].

Their disjunction is then panprotopsychoism. In both cases Q would be a priori entailed by P, but neither of the two is materialism.

²³ Of course, 'P & \sim M' will not be secondarily possible, but this is irrelevant on the hypothesis that facts about M are constituted facts, not identical to facts about micro particles of what M refers to. For example, a cow is not identical to its DNA, though its DNA is essential to it. So even if 'P & \sim cow-DNA' is secondarily inconceivable, because P will contain the information that cow-DNA is present, still 'P & \sim cow' is conceivable.

²⁴ A similar line of reasoning is proposed by Mark Johnston (1997), who also insists on constitution as the better relation between body and mind.

²⁵ To be sure, panprotopsychoism remains an alternative, but I think it is unnecessary; materialists have no reason to accept to be forced to adopt this view.

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